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In the Claims:

1. (Currently Amended) A lamp seal comprising a functionally gradient material and a lead bar of tungsten; wherein the functionally gradient material has layers of mixtures of silica glass as an electrically non-conductive material and molybdenum as a conductive material in which a layer at one end is non-conductive and a layer at an opposite end is conductive, with intervening layers in which the proportion of conductive material increases moving from said one end to said opposite end; wherein the lead bar passes through a hole extending through the functionally gradient material entering in one of said ends and out the other of said ends; wherein the lead bar is attached in a conductive region of the functionally gradient material and fixed by the functionally gradient material having been sintered thereto; and wherein the proportion of conductive material at a point of attachment of the lead bar to the functionally gradient material is no less than 0.6 Vol% and no more than 39 Vol%; and wherein a cylindrical gap is located between the lead bar and the functionally gradient material, said cylindrical gap being formed within the functionally gradient material by an enlargement of the inside diameter of the insertion hole which extends from a point of attachment of the lead bar to the functionally gradient material to the non-conductive end of the functionally gradient material.

2. (Original) A lamp seal as described in claim 1, wherein said hole is cylindrical with an expanded diameter at the non-conductive end, such that the diameter of the cylindrical hole in the region from the non-conductive end of the functionally gradient material to the point of attachment of the lead rod, satisfies the condition $C = 1.2d \leq C \leq 0.6D$, where C is the diameter of the cylindrical hole in the region from the non-conductive end of the functionally gradient material to the point of attachment of the lead rod, d is an outer diameter of the lead bar and D is an outer diameter of the functionally gradient material.

3. (Original) A lamp seal as described in claim 1, wherein the hole expands in a tapered form from the point of attachment toward the non-conductive end; and the thickness

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of the functionally gradient material from the point of attachment to the non-conductive end is less than its thickness at the point of attachment.

4. (Original) A lamp seal as described in claim 2, in which the outside diameter of the functionally gradient material at and near the non-conductive end is smaller than the outside diameter at the point of attachment.